

Claims

- [c1] 1. An internal combustion engine cylinder head camshaft bearing ladder, comprising:
a first body with an aperture to facilitate threaded connection of said body to a cylinder head with a cut out for receiving a cam shaft, said first body also having a pocket; and
a solenoid actuator positioned within said pocket for activating a switchable rocker arm assembly.
- [c2] 2. A camshaft bearing ladder as described in claim 1, having connected thereto a plurality of solenoid actuators.
- [c3] 3. A camshaft bearing ladder as described in claim 1, having a plurality of cut outs for reception of a plurality of cam shafts.
- [c4] 4. A camshaft bearing ladder as described in claim 2, wherein said solenoid actuator is encapsulated within said camshaft bearing ladder pocket by a polymeric material.
- [c5] 5. A camshaft bearing ladder as described in claim 1, wherein said solenoid actuator has leads connected with an integrated circuit board.
- [c6] 6. A camshaft bearing ladder as described in claim 5, wherein said circuit board is sealably connected with a pass through connector.
- [c7] 7. A camshaft bearing ladder assembly as described in claim 6, having at least a second solenoid actuator for a second rocker arm and wherein said second solenoid actuator has leads sealably connected with said integrated circuit board.
- [c8] 8. A method of assembling a portion of a solenoid actuator to a dual operational rocker arm assembly, comprising:
connecting a solenoid actuator in a pocket of a camshaft bearing ladder; and
connecting said camshaft bearing ladder with a cylinder head thereby positioning said solenoid actuator adjacent said rocker arm assembly.

- [c9] 9.A method as described in claim 8, further including encapsulating said solenoid actuator within said camshaft bearing ladder pocket with a polymeric material.
- [c10] 10.A method as described in claim 9, wherein said polymeric material is an epoxy resin.
- [c11] 11.A method as described in claim 9, further including connecting leads of said solenoid actuator with an encapsulated circuit board.
- [c12] 12.A method as described in claim 11, further including connecting said circuit board with a pass through connector.
- [c13] 13.An internal combustion engine comprising:
a combustion chamber;
a head with a passageway fluidly connected with said chamber;
a valve controlling fluid communication between said chamber and said passageway;
a cam shaft rotatably mounted on said head by a camshaft bearing cap ladder, said ladder having a pocket formed therein;
a rocker arm for actuating said valve, said rocker arm having first and second modes of operation of said valve; and
a solenoid actuator for actuating said rocker arm between said first and second modes of operation, said solenoid actuator being connected with said bearing cap ladder within said pocket.
- [c14] 14.An internal combustion engine as described in claim 13, wherein said bearing cap ladder is connected with a second solenoid which actuates a second rocker arm assembly.
- [c15] 15.An internal combustion engine as described in claim 14, wherein said second solenoid actuates a rocker arm which is actuated by a second cam shaft rotatably mounted on said head.
- [c16] 16.An internal combustion engine as described in claim 14 wherein said second solenoid actuates a rocker arm assembly actuated by a cam shaft common with

the other rocker arm assembly.

- [c17] 17. An internal combustion engine as described in claim 14, wherein said solenoid has leads provided by a printed circuit board connected with said bearing cap ladder.
- [c18] 18. An internal combustion engine as described in claim 17, wherein said printed circuit board is connected with a pass through connector.
- [c19] 19. An internal combustion engine as described in claim 18, wherein said pass through connector passes through a cam cover connected with said head.
- [c20] 20. An internal combustion engine, comprising:
 - a combustion chamber;
 - a head with an air passageway fluidly connected with said chamber;
 - first and second air passageways fluidly connected with said chamber;
 - first and second valves controlling fluid communication between said chamber and said respective first and second passageways;
 - first and second rocker arms for actuating said first and second valves respectively, said rocker arms having first and second modes of operation;
 - first and second cam shafts rotatably connected to said head by a bearing cap ladder;
 - first and second solenoid actuators for actuating said rocker arms between said first and second modes of operation, said solenoid actuators being connected in pockets of said bearing cap ladder;
 - integrated circuit boards with leads sealably connected with said solenoids;
 - a pass through connector connected with said leads of said integrated circuit board; and
 - a camshaft bearing cap cover penetrated by said pass through connector to allow for electrical connection to said solenoids.